5.0 SOCIOECONOMIC MODULE

5.1 Technical Basis: Data Sources, Current Conditions, and Trends

The socioeconomic investigations for the FKCCS focused on the connection between residential land use, population, and demands generated on non-residential land uses. In order to establish these relationships, available data was examined to determine current socioeconomic conditions and trends as they relate to land use. Five interim reports (Appendix A) document the research conducted for the socioeconomic module of the FKCCS.

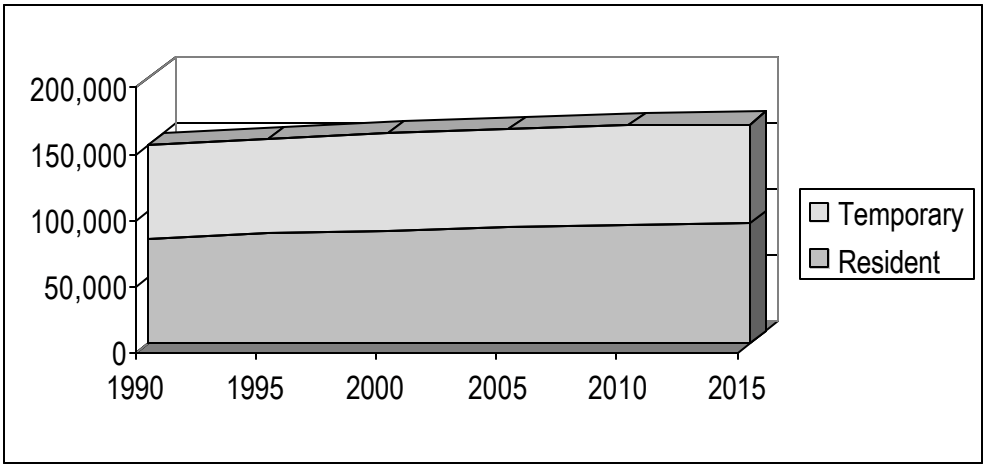
The main sources of information included the U.S. Bureau of the Census, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), Bureau of Economic and Business Research of the University of Florida (BEBR), Monroe County Planning Department (MCPD), and the Monroe County Property Appraiser.

5.1.1 Population and Housing

The permanent population of the Florida Keys in 2000 was 79,589 (U.S. Census Bureau 2002). Population growth in the Keys slowed significantly in the 1990s, largely because of the implementation of the Rate of Growth Ordinance (ROGO). Between 1970 and 1980, the permanent population of the Florida Keys increased by 20.2 percent; between 1980 and 1990, the permanent population increased by 23.5 percent. In contrast, between 1990 and 2000, the permanent population only increased by 2 percent.

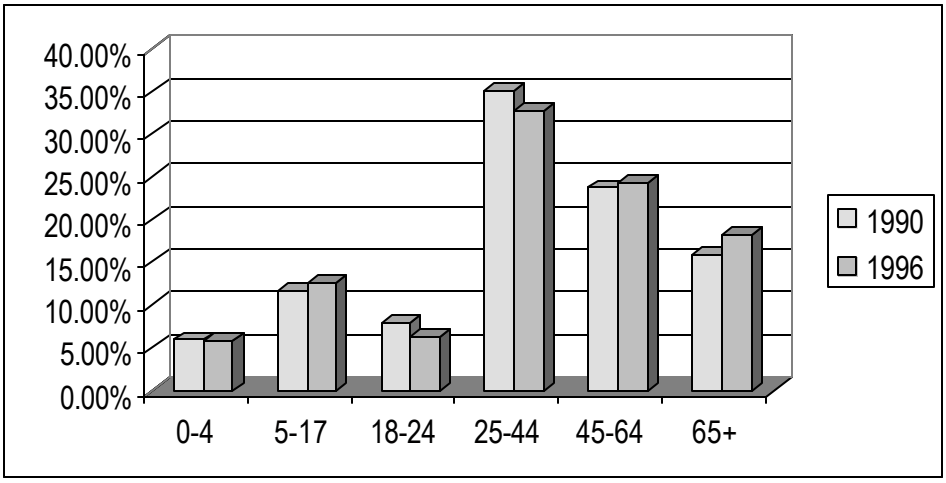
In addition to the permanent population, the Florida Keys host a seasonal population (those who stay in the Keys between 30 and 180 days) and a transient population (those who stay up to 30 days). Monroe County (Monroe County 2001) applies the concept of "functional" population to evaluate facilities demand. The functional population is defined as the number of people likely to be in the Florida Keys on any given evening, and includes the permanent, seasonal, and transient populations. The proportion of temporary population (transient and seasonal combined) relative to permanent population has fluctuated little since 1990 (Figure 5.1), and averages 86 percent of the permanent population.

FIGURE 5.1
TRENDS OF RESIDENT AND TEMPORARY POPULATION



The age composition of the permanent population changed between 1990 and 1996, with an increase in the 5-17 year and over 45-year categories, and a decrease in the 0-4, 18-24, and 25-44 categories (Figure 5.2).

FIGURE 5.2
AGE COMPOSITION, 1990 AND 1996



The Census Bureau reports 35,086 occupied housing units and 51,617 housing units for 2000, indicating 16,531 units (32 percent) are "vacant." Approximately 75 percent of the vacant units are seasonally occupied. The mean Keys-wide household size is 2.22.

Annual housing construction peaked in the mid-1970s and again in the mid-1980s, but has since fallen and leveled off in the mid-1990s (Figure 5.3). In contrast, the price of new houses has steadily increased in the 1990s (Figure 5.4). The increase in price is largely due to an increase in the price per square foot (Figure 5.5).

FIGURE 5.3
MONROE COUNTY HOUSING CONSTRUCTION TRENDS

FIGURE 5.4
MEDIAN NEW HOME PRICES IN MONROE COUNTY

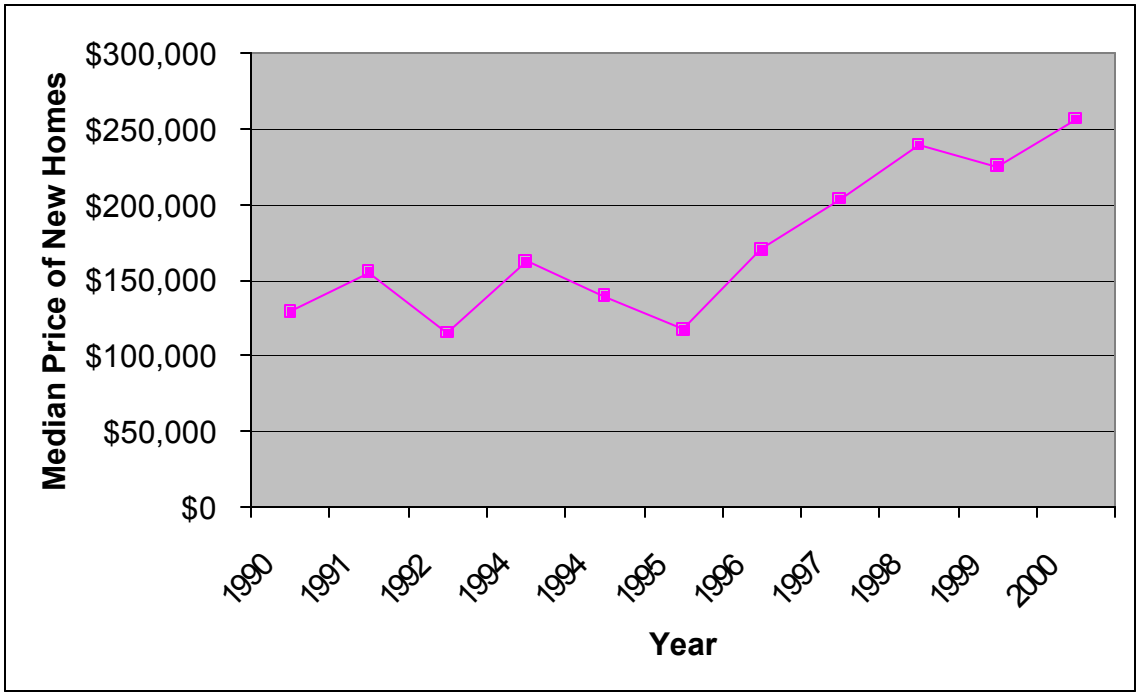
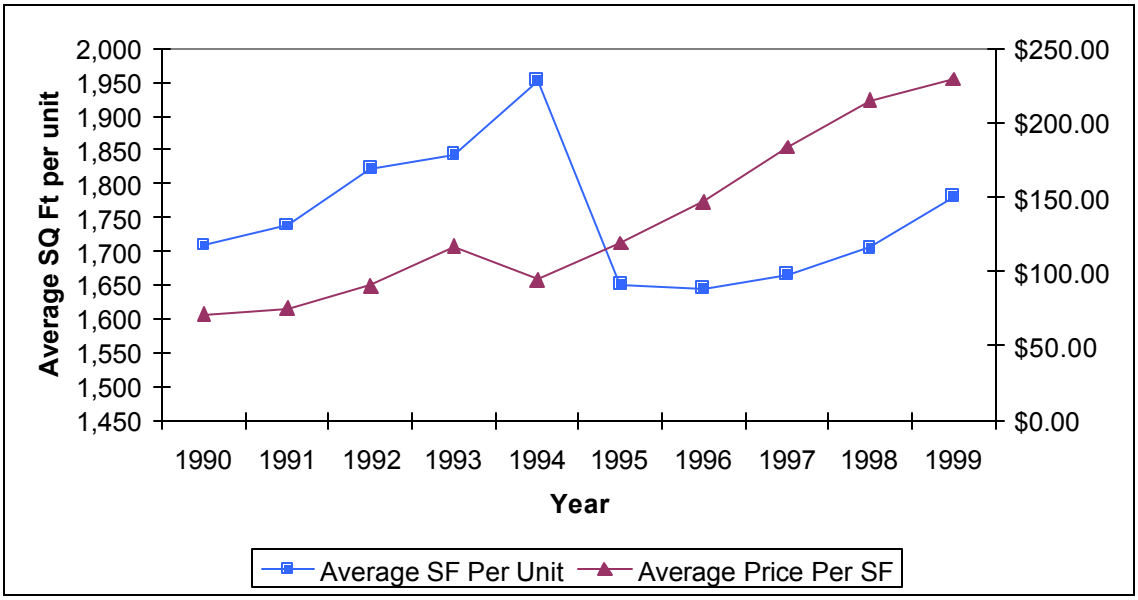


FIGURE 5.5
PRICE PER SQUARE FOOT OF A NEW HOME

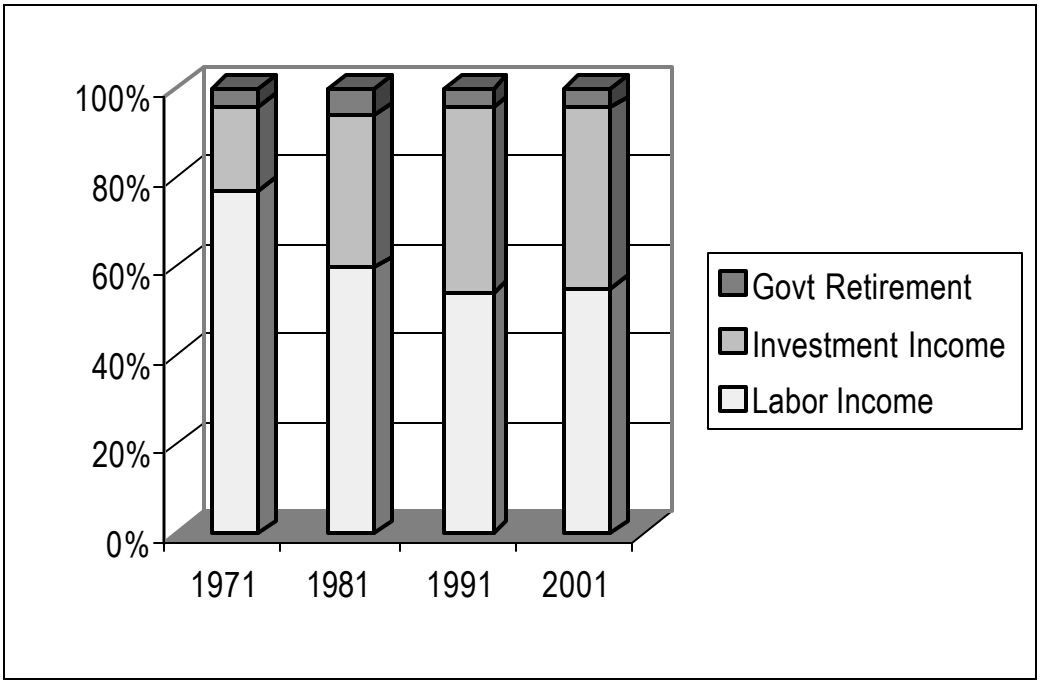


5.1.2 Employment and Income

Total employment in the Florida Keys increased by 18.14 percent from 1990 to 1997, while resident population increased by 2.0 percent from 1990 to 2000. Tourist-oriented businesses, such as food establishments, miscellaneous goods (souvenirs and specialty items), hotels/motels, and amusement services, accounted for 34.8 percent of the county's total employment growth.

Total annual payrolls in Monroe County grew by 49 percent during the 1990 to 1997 period. The U.S. Department of Housing and Urban Development estimated a 2000 median household income for Monroe County at $44,600. Personal income resulting from wages and salaries (labor income) has markedly declined since 1971 (BEBR 2000). Personal income resulting from investments (dividends, interest, and rent) increased from 18.9 percent in 1971 to 40.9 percent in 2001 (Figure 5.6). This shift suggests that a larger number of households do not rely on weekly paychecks for their income.

FIGURE 5.6
TRENDS OF PERSONAL INCOME COMPOSITION



The Florida Price Level Index (PLI), which uses the entire state as its basis of 100.00 index points, was examined for the period 1989 to 1998 to provide an indicator of the cost of living in the Florida Keys. The PLI is calculated annually by the State Department of Education for each county in the state; both aggregate and per sector indices are reported. Monroe County had the highest aggregate price index in Florida during 1989-1998. The PLI for housing in Monroe County was 127.23 in 1998, showing that the cost of housing is higher in the Keys than the rest of Florida.

5.1.3 Tourism

Tourism is the most important sector of the economy in the Florida Keys. The most consistent source of estimates of tourist activity is the *Florida Visitor Study*, conducted each year by the State of Florida. In 1998 (most recent report available), an estimated 48.7 million tourists visited the state, of which 1,266,000 (2.6 percent) vacationed in the Florida Keys.

NOAA conducted a study of visitors to the Florida Keys based on a sample survey during June 1995 to May 1996 (Leeworthy 1996). The purpose of the study was to determine activities and economic value of visitors to the Florida Keys. Over three million people visited the Keys during the study period, of which 2.5 million visited for recreation purposes (Table 5.1). Over 40 percent of the 2.5 million visitors made it to Key West, whereas 27 percent visited the Upper Keys, 21 percent the Middle Keys, and 9 percent visited the Lower Keys.

TABLE 5.1
VISITORS TO THE FLORIDA KEYS 1995-1996

Category	Total Persons	Person-Days
Recreating Visitors	2,540,488	13,298,387
Non-Recreating Visitors	517,093	2,974,738
All Visitors	3,057,581	16,273,125

This survey also investigated the expenditure patterns of the visitors over this 12-month period. The average expenditure per person per day was $108.07, similar to the value reported in the *Florida Visitor Study* for 1998 ($117.80). The NOAA study shows that 70 percent of visitors' expenditures cover lodging, food and beverage, and transportation. Boating, fishing, and diving activities account for 12 percent of the expenditures (Table 5.2)

TABLE 5.2
AVERAGE VISITOR EXPENDITURES BY PERSON PER DAY

Expenditure Category	Amount
Lodging	$36.31
Food and Beverage	$29.76
Transportation	$10.56
Boating	$5.69
Fishing	$3.30
Diving	$3.46
Sightseeing	$4.16
Other Activity	$1.57
Miscellaneous	$12.53
Services	$1.64
Total Expenditure	$108.98

Source: *Visitor Profiles: Florida Keys & Key West*; NOAA.

While the economic impact of tourism on the Florida Keys is very significant, the land use impact is focused on relatively few activities, and the total demand in acres or floor space is limited. Hotels/motels and restaurants are also important indicators of tourist activity (Table 5.3). From 1989 to 1998, the number of hotels increased from 17 to 25 and the total number of rooms increased by nearly 800. During the same period, the number of motels increased from 157 to 174 and the total number of rooms increased by more than 400. The number of restaurants decreased, but their total seating capacity and average size increased.

TABLE 5.3
TOURIST-RELATED BUSINESSES IN MONROE COUNTY

Facilities	1989	1998
Hotels		
Number of Establishments	17	25
Number of Rooms	1,455	2,238
Motels		
Number of Establishments	157	174
Number of Rooms	5,647	6,068
Restaurants		
Number of Establishments	553	524
Seating Capacity	35,591	42,357

5.2 Module Structure

The socioeconomic module calculates population and other socioeconomic indicators that result from the user-defined development scenario. The module links the number of people and the quantity of land, housing and commercial building space required to accommodate their needs. In turn, businesses create demand for employment in relatively constant ratios to the floor space devoted to a particular commercial or industrial activity. These relationships are expressed as coefficients (stated as some unit of land or building space per capita) that are applied to calculate outputs of this module.

The module considers two main components:

- Population/Residential,
- Economic/Nonresidential, and
- Socioeconomic Indicators.

The Population/Residential Component consists of three elements or groups of related calculations. The purpose of this component is to estimate the population based on the number of residential dwelling units generated in the user-defined scenario.

The Economic/Nonresidential Component contains eight elements for calculating the economic and nonresidential land use needs and parameters, including population necessary to support nonresidential land uses defined in the scenario. These outputs include commercial and industrial Gross Floor Area (GFA) needs, number of hotel rooms needed, total costs of new construction, total employment needs, and the taxable value of new construction.

Two types of inputs are included in the Socioeconomic Module (Table 5.4):

- **Built-in Coefficients and Constants.** Once calibrated for Monroe County, the elements remain unchanged until the model is recalibrated in the future. Many of the coefficients and constants are contained in "Look-up" tables with specific values for each parameter of the 28 Wastewater Planning Areas. Coefficients and constants were estimated using existing data (e.g., people per house were calculated by dividing the number of permanent residents reported in the 2000 Census by the total number of households reported in the 2000 Census).

- **Scenario Inputs.** These conditions are used as input for each scenario and are defined by the user through the GUI. This results in input data such as the acres of each land use for the scenario. These change as scenarios change.

TABLE 5.4
REPRESENTATIVE INPUT DATA FOR SOCIOECONOMIC MODULE

Built-In Coefficients and Constant
Persons per Household
GFA per Capita
GFA per Employee
Number of Hotel Rooms per Transient Person
Number of Hotel Employees per Room
Average Tax Values
Scenario GUI Inputs
Acres of Residential Land Use
Square Footage of Commercial, Industrial, Hotel Land Use
Dwelling Units By Planning Unit
GFA By Planning Unit

The basic data input for the Socioeconomic Module is land use. However, other information is required to support the outputs of the module. The following types of data are used in this module are summarized below:

Demographic Data. Examples of this information include persons per household, population growth rates during 1990-2000, and ratios of employment per 1,000 square feet of building space for major land use categories.

Per Capita Floor Area Coefficients. Because of accepted characteristics of consumer behavior and commuting patterns, these coefficients are presented as a single value for each nonresidential land use category on a countywide basis. Retail market areas and labor sheds of most businesses extend beyond the boundaries of individual planning units, and people will shop or work in locations remote from their homes. The per capita floor area coefficients used in the CCIAM are

uniform throughout the Florida Keys. These coefficients were developed from the current Property Appraiser's database for Monroe County.

Property Values. This information is used to measure several socioeconomic impacts, such as taxable value of new development, construction cost of new development, market price of new homes, and household income required to purchase a house of average price. These coefficients were calculated from the Monroe County Property Appraiser's database.

Construction Costs. An estimate of per-unit construction costs is used to calculate the value of new development established in the scenario. Data from *Means Square-Foot Construction Costs*, a nationally recognized estimating manual, was used to estimate these coefficients. This is a standard reference for preparing pre-design estimates of construction costs by architects, builders, and feasibility analysts. The basic values were adjusted by the manual cost index to reflect averages in the region.

Wage Rates. Average annual wage rates per employee were extracted from the current edition of *County Business Patterns*, an annual publication of the U.S. Department of Commerce. These wage rates were equated to the land use categories used in the module. *County Business Patterns* was used because of its uniformity of data collection throughout the nation, as well as its long history of publication.

The Socioeconomic Module produces the following outputs, based on user-specified development scenarios, for each planning unit:

- Population required to support the dwelling units resulting from the development scenario;
- Population ("customers") required to support the non-residential component of the scenario;
- Employees available and required to support the nonresidential component of the scenario;
- Payrolls that will result from development of the nonresidential component of the scenario;
- Taxable value of new development; and
- Construction value of new development.

5.3 Calibration

Calibration of this model mainly involved determining the actual coefficients such as land use ratios and household sizes that represented the conditions of the Florida Keys and the planning units within the study area.

5.3.1 Demographic Coefficients

Demographic coefficients (e.g., persons per household) were calibrated for each planning unit in the study area, which required consideration of County planning areas (PAEDs), wastewater planning units, and census tracts from the U.S. Census of 2000. This process was facilitated because most of these boundaries are similar. Information from the 2000 Census was used to determine the number of people per household.

Other demographic coefficients address the ratio of employees per 1,000 square feet of GFA for each of the nonresidential land use categories. These were computed by summing the GFA for each land use category on a countywide basis and dividing the result by the number of employees reported for that land use group in the current *County Business Patterns* report. Thus, the ratio of employees per 1,000 square feet of building space and user-defined area of commercial and industrial development provide an estimate of required employment.

5.3.2 Land Use Coefficients

Housing demand was based on a combination of permanent and seasonal population, while hotel/motel demand was based on transient population. These coefficients are expressed in terms of a unit of building space (e.g., square foot) per capita.

5.3.3 Economic Coefficients

Economic coefficients are those that are expressed in dollar values but do not directly relate to *ad valorem* taxes. The following coefficients were calculated:

- **Construction Costs for Building Types:** As noted previously, these coefficients were reported in a standard construction cost-estimating manual. Their primary application in the model is for calculation of the estimated cost of new development.

- **Wage Rates:** These average annual wages represent the potential income that will result from each new employee in a specific land use group. As noted before, these income coefficients come from County Business Patterns, a yearly publication of the U.S. Department of Commerce.

5.3.4 Financial Coefficients

In this module, the primary financial coefficient is the taxable value of new development. The taxable values were computed from the current Monroe County tax roll. The calculation was completed by summing the GFA and taxable value of each land use category. Then, the total GFA was divided into the total taxable value to compute an average value per square foot of GFA. Due to the high degree of variation, this computation is reported in each planning unit. Added taxable value is a measure of development quality, as well as, fiscal resources to the County.

5.4 Assumptions and Uncertainty

The fundamental assumption of this module is that future growth in the Florida Keys will likely proceed in a stable manner, without significant deviations from recent historical trends. This assumption is supported by the low rate of population growth from 1990 to 2000 (2 percent), and the consistency of Monroe County's program to limit growth since 1992. Other important assumptions are as follows:

- Demographic characteristics, especially those that strongly affect land use demand, will remain relatively unchanged during the study time frame of 20 years. The slow rate of population growth documented by results of the U.S. Census Bureau counts in 1990 and 2000 indicate that overall countywide averages have not changed significantly over the past ten years. In addition, the future growth rates projected by Monroe County and the BEBR at the University of Florida are comparable to that exhibited during recent history. Individual growth projections by these agencies indicate that the permanent population of the Florida Keys will increase by only 3,000 to 4,600 between 2000 and 2020. These small projected growth rates will have limited influence on overall population characteristics that drive land use demand.

- Because of the limited population growth expected in the future, the ratios between population size and land use area will remain essentially constant over the study time frame. These ratios include average household size and per capita measures of major land use groups, such as square feet of retail, office, and industrial space.

While the basic modeling concepts and specific techniques used in this module are commonly accepted in urban planning and land economics, some uncertainties arise from the database available for calculations within the module. The module was designed to permit recalibration by changing any of its critical coefficients as updated information becomes available. The specific areas of uncertainty are:

- The difficulty in accurately tracking and projecting temporary residents, tourists, and other visitors to the Florida Keys creates uncertainty about demand for specific types of land use. The best analysis of these segments of the population (Monroe County 2001) was incorporated into the module. Most of these visitors and temporary residents are largely supported by discretionary income and may vary sharply in response to general economic conditions.

- A second uncertainty associated with tourist statistics results from an absence of a uniform data collection system. State agencies and local organizations produce information about the number of tourists and their activities and expenditures, but data collection and analysis differ and the resultant findings vary considerably. Recent surveys of tourist data lack a rigorous sampling methodology and controls that would ensure representative data sets.

In general, the greatest uncertainty is caused by the variation in the annual number of tourists, seasonal residents, and other visitors. This uncertainty will continue in the Florida Keys, as in other tourist centers in Florida, unless a very expensive and statistically valid survey program is established to better measure this component of the population.

5.5 Example Module Calculations

Module calculations interrelate two data sets: 1) coefficients that, once calibrated for Monroe County, will remain unchanged until the model is recalibrated in the future, and 2) scenario-dependent inputs entered by users through the CCIAM GUI.

The operation of this module entails many individual calculations. For example, given a scenario-derived area for residential, retail, and GFA, a series of calculations result in a projected population, a support population for retail uses, and the payroll generated by the scenario (Tables 5.5 through 5.7).

TABLE 5.5
POPULATION RESULTING FROM HYPOTHETICAL SCENARIO

Calculation Steps	Value	Source
Housing Units (Households)	732	Scenario Input
TIMES Persons Per Household	2.22	Coefficient
EQUALS Population	1,625	Output

TABLE 5.6
POPULATION REQUIRED TO SUPPORT RETAIL AREA CREATED BY HYPOTHETICAL SCENARIO

Calculation Steps	Value	Source
GFA in Square Feet	675,180	Scenario Input
DIVIDED BY Retail GFA Per Capita	52.65	Coefficient
EQUALS Required Support Population (Customers)	12,824	Output

TABLE 5.7
EMPLOYMENT REQUIRED AND PAYROLL GENERATED BY RETAIL AREA CREATED IN HYPOTHETICAL SCENARIO

Calculation Steps	Value	Source
Projected GFA in Square Feet	675,180	Input
TIMES Retail Employment Per 1,000 Square Feet of GFA	2.18	Coefficient
EQUALS Retail Employment Required to Support Scenario	1,472	Output
TIMES Average Annual Retail Wage in County	$17,591	Coefficient
EQUALS Annual Retail Payroll (millions)	$25.9	Output

5.6 Public Involvement and Information Program

5.6.1 Introduction

A separate contractor implemented a Public Involvement and Information Program (PIIP) to inform citizens of the study and involve the community in the CCIAM development process (Appendix D). Involving the Keys communities was a critical element of the study process because many of the CCIAM outputs are related to quality of life issues. The PIIP was tasked with developing a productive relationship with stakeholders and creating a stakeholders database. The program specifically set out to involve and inform the local media, create a speakers' bureau, and to create a traveling exhibit of educational information about the FKCCS. The program specifically set out to involve and inform the public through a media program, public meetings, stakeholder relations, and public information materials. In addition, the Public Information and Involvement Program obtained the public input needed to understand and incorporate community character into the FKCCS.

5.6.2 Research

The PIIP included five basic elements. The first element was to identify all previous public opinion surveys taken in the Florida Keys. Environmental topics included natural resources, ecosystems, and species of concern, along with stormwater, wastewater, and water quality issues. Human infrastructure, transportation, and hurricane evacuation topics were also researched. The research yielded 21 previous surveys, but they were all determined to be inadequate for the purposes of the program.

5.6.3 Media Program

The media program involved developing and maintaining a comprehensive list of print and broadcast media contacts, and coordinating with the press and radio especially prior to public meetings. In addition, a clipping service was established to track applicable and related articles dealing with the issues facing the FKCCS and that were pertinent to the criteria and parameters built into CCIAM. A library of news clippings was developed and forwarded weekly to the CCIAM team. These articles were compiled from a variety of Keys' newspapers, newsletters, and special interest group publications including *The Miami Herald*, *The Key West Citizen*, and *The Florida Keys Keynoter*.

This news media coverage created an extensive library of clippings to assist in identifying and correcting misinformation about the FKCCS as well as tracking other significantly related issues. News releases and public notices were prepared and distributed. A FKCCS website was also developed and monitored to provide information to the public and receive comments. A database mailing list of over 6,000 names was developed for disseminating information about the project, as well as a web-based comment tracking system to catalog and cross-reference all comments received via the Internet, mail, workshops, and other media.

5.6.4 Meetings and Workshops

Public meetings have been an integral part of the PIIP. Public meetings were held in the Upper, Middle, and Lower Keys in July 2000, March 2001, and April 2002. In preparation for each series of public meetings, the study team created press kits including a Fact Sheet and Frequently Asked Questions, speaker cards, public notices, press releases, and an agenda. A synopsis of public comments and concerns presented at each meeting was provided to the study team. Each public meeting was videotaped.

In addition, community meetings, and study team and working group meetings were completed to furnish information to the public and enhance awareness and understanding of the FKCCS. Other meetings were held with government officials including Monroe County commissioners and municipality representatives.

5.6.5 Stakeholder Relations

A computerized stakeholder mailing list was developed consisting of individuals, elected officials, government agencies, citizen groups, community organizations, and minority communities with an interest in the FKCCS. In addition, a public comment database and tracking system was established to record verbal and written comments.

5.6.6 Public Information, Education, and Awareness

Public information materials, including three brochures, were prepared at important progress points in the FKCCS development. A speakers' bureau was developed to provide direct communication with organizations throughout the Keys. In addition, a traveling exhibit was designed for public information and outreach. Beginning in November 2000, the exhibit began a schedule of one-week displays at various locations in the Keys. The exhibit provided a thorough description of the many elements of the FKCCS along with describing the goal, objectives, and timing of the work.

An information exchange program was developed to collect qualitative community character information from public comments and questionnaires. In an effort to provide an understanding of community character for the CCIAM, information gathered from these meetings was translated into a semi-quantitative ranking system of 17 issues of public concern (Table 5.8). This feedback data was used to address carrying capacity indicators for quality of life issues. The PIIP is described in detail in a separate report in Appendix D.

TABLE 5.8
RESULTS FROM THE COMMUNITY CHARACTER/QUALITY OF LIFE ISSUES RANKING

Rank	Parameter	Mean Rank of Aggregated Results
1	Water Quality Protection/Improvement	3.5
2	Conservation of Existing Habitat	3.6
3	Maintain Current Community Character	5.7
4	Decrease Level of Traffic	6.31
5	More Land Use and Development Growth Controls	6.87
6	Affordable Housing	6.94
7	Improve Safety on U.S. 1	7.15
8	Strengthen Enforcement of Existing Government Regulations	7.27
9	Protection of Property Owner's Rights	7.83
10	Decrease Level of Tourism	7.94
11	Current Land Use and Development Growth Controls	8.96
12	Land Recreation Opportunities	9.15
13	Water Recreation Opportunities	9.43
14	Current Level of Tourism	10.0
15	Reduce Government Regulation	10.5
16	Less Land Use and Development Growth Controls	11.8
17	Increase Level of Tourism	12.6